

## [P3] Abiotic Stress for Crop Production

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 3 (Poster) (Abiotic Stress for Crop Production)

1:15 PM - 2:00 PM

### [P3-34] Death of Roots Retards the Growth Recovery of Common Buckwheat under Waterlogged Conditions

\*Nominated for Presentation Awards

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In converted paddy fields, waterlogging severely decreases the growth and yield of common buckwheat (*Fagopyrum esculentum* L.). In this study, we examined the hypothesis that under waterlogged conditions low soil redox potential (Eh) causes the death of root tips, which retards the shoot growth recovery of common buckwheat. We grew common buckwheat cv. kitawasesoba in root boxes. When seedlings had the 3rd leaf, the root boxes went through either 3 or 6-day waterlogging treatments (W3 or W6), whereas the other root boxes remained as drained controls (C). Death of roots was evaluated by changes of root surface area and a number of root tips turned red by triphenyltetrazolium chloride (TTC) staining. Only Eh of W6 decreased to 300 mV, in which almost all dissolved oxygen would disappear. After waterlogging treatments, both Eh of W3 and W6 recovered to the same value as C. The shoot dry weight (SDW) of W3 recovered remarkably after waterlogging treatment, but that of W6 did not recover after waterlogging treatment. The root surface area of W3 and W6 showed similar changing trends to SDW. The number of red root tips of W3 was significantly smaller than that of C only at 3 days after the waterlogging treatment initiation (DATI), while that of W6 was significantly fewer than that of C from 3 to 13 DATI. From these results, we concluded that when Eh decreased to about 300 mV, the death of root tips severely inhibited the shoot growth recovery of common buckwheat.